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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/561,446	03/20/2007	Laurent Philippe	282369US6XPCT	8212
22850	7590	05/15/2008		
OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314			EXAMINER NGUYEN, TU MINH	
			ART UNIT 3748	PAPER NUMBER
			NOTIFICATION DATE 05/15/2008	DELIVERY MODE ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

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<b>Office Action Summary</b>	<b>Application No.</b> 10/561,446	<b>Applicant(s)</b> PHILIPPE ET AL.	
	<b>Examiner</b> TU M. NGUYEN	<b>Art Unit</b> 3748	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 30 January 2008.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 7-17 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 7-17 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 December 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### **DETAILED ACTION**

1. An Applicant's Amendment filed on January 30, 2008 has been entered. Claims 7 and 12 have been amended; and claims 13-17 have been added. Overall, claims 7-17 are pending in this application.

#### ***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office Action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. **Claims 7, 12, and 13 are rejected under 35 U.S.C. 102(b) as being anticipated by Digeser et al. (U.S. Patent 6,082,325).**

Re claims 7 and 12, as shown in Figures 1-3, Digeser et al. disclose a motorization system and a method for control of said motorization system including a diesel engine (10), an air-intake circuit (4), and an exhaust circuit (14) for exhaust gas originating from the engine, the intake circuit including an adjusting mechanism (11, 13) for controlling flow of air entering the engine and the exhaust circuit including a nitrogen oxides trap (lines 42-43 of column 1 and line 31 of column 6) for storage of nitrogen oxides (NO<sub>x</sub>) contained in the exhaust gases, the method performing a regeneration mode to regenerate the nitrogen oxides trap by supplying reducing exhaust gases, the method comprising:

- determining an index value of air flow corresponding to an operating point of the engine during the regeneration mode (see lines 4-8 of column 7);

- instructing the adjusting mechanism (11, 13) to obtain an air flow close to the index value (see lines 43-52 of column 8); and

- performing a primary (Main Injection) and secondary injection (post-injection (line 60 of column 7)) of fuel, the secondary injection being performed during an expansion phase and operative to maintain the exhaust gases in the reducing state,

wherein the primary and secondary injections are performed such that the diesel engine delivers a constant torque during a transition to the regeneration mode (lines 60-67 of column 7).

Re claim 13, in the method of Digeser et al., as depicted in Figure 3, during the primary injection, a quantity of fuel injected into the engine is reduced when the air flow increases (during normal lean condition), and during the secondary injection, the quantity of fuel is increased so as to maintain a richness of the exhaust gas higher than 1 (during regeneration rich condition), and to maintain the constant torque.

### ***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office Action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

**5. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Digeser et al. as applied to claim 13 above, in view of Odendall (U.S. Patent 6,823,666).**

The method of Digeser et al. discloses the invention as cited above, however, fails to disclose a step of measuring a richness of the exhaust gas with a sensor positioned upstream of the nitrogen oxides trap.

As shown in Figure 1, Odendall discloses an exhaust gas apparatus for purifying an exhaust gas of a diesel internal combustion engine (1), comprising a NO<sub>x</sub> trap (6) and a particulate filter (12) located in an exhaust gas circuit (2). As indicated on lines 47-65 of column 4, Odendall teaches that it is conventional in the art to utilize a lambda sensor (8) positioned upstream of the NO<sub>x</sub> trap to measure a richness of the exhaust gas in order to precisely determine an energy input into the NO<sub>x</sub> trap. It would have been obvious to one having ordinary skill in the art at the time of the invention was made, to have utilized the sensor taught by Odendall in the method of Digeser et al., since the use thereof would have been routinely practiced by those with ordinary skill in the art to effectively control a regeneration step of the NO<sub>x</sub> trap.

**6. Claims 8-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Digeser et al. as applied to claim 7 above, in view of Kitahara et al. (U.S. Patent 6,962,045).**

Re claim 8, the method of Digeser et al. discloses the invention as cited above, however, fails to disclose that the motorization system is provided with an accessory that generates a variable back-pressure in the exhaust circuit, and the air-flow index value is incremented together with the exhaust back-pressure.

As shown in Figure 1, Kitahara et al. disclose an exhaust gas apparatus for purifying an exhaust gas of a diesel internal combustion engine (1), comprising a NO<sub>x</sub> trap (13) located in an exhaust gas circuit (10). Kitahara et al. teach that it is conventional in the art to include an accessory (14) adapted to remove and purify harmful particulate matter emissions in the exhaust gas and to generate a variable back-pressure in the exhaust circuit; and an air-flow index value is incremented together with the exhaust back-pressure (see at least step S103 in Figure 3, Figure 15, and lines 24-36 of column 5). It would have been obvious to one having ordinary skill in the art at the time of the invention was made, to have utilized the accessory taught by Kitahara et al. in the method of Digeser et al., since the use thereof would have been routinely practiced by those with ordinary skill in the art to remove and purify harmful NO<sub>x</sub> and particulate matter emissions in an exhaust gas stream.

Re claims 9-11, in the modified method of Digeser et al., as taught by Kitahara et al., the accessory that generates variable back-pressure is a particle filter (14), the air-flow index value being corrected by a factor that is a function of the operating point (Q, Ne) and of the degree of loading of the particle filter (the filter is regenerated when a degree of loading of the filter is high (step S501 has YES answer)), wherein the degree of loading of the particle filter is evaluated by the exhaust-gas flow passing through it and by a pressure difference between the inlet and outlet (see step S12 in Figure 2, Figure 13, and lines 42-57 of column 4), and wherein the degree of loading of the particle filter is evaluated by measuring pressure upstream (using pressure sensor (24)) from the particle filter relative to the exhaust-gas flow.

**7. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Digeser et al. in view of Kitahara et al. as applied to claim 9 above, and further in view of Odendall.**

The method of Digeser et al. discloses the invention as cited above, however, fails to disclose a step of measuring a richness of the exhaust gas with a sensor positioned upstream of the particulate filter.

As shown in Figure 1, Odendall discloses an exhaust gas apparatus for purifying an exhaust gas of a diesel internal combustion engine (1), comprising a NOx trap (6) and a particulate filter (12) located in an exhaust gas circuit (2). As depicted in Figure 3 and indicated on lines 40-61 of column 5, Odendall teaches that it is conventional in the art to utilize a lambda sensor (8) positioned upstream of the particulate filter to measure a richness of the exhaust gas in order to precisely control a regeneration step of the particulate filter. It would have been obvious to one having ordinary skill in the art at the time of the invention was made, to have utilized the sensor taught by Odendall in the method of Digeser et al., since the use thereof would have been routinely practiced by those with ordinary skill in the art to effectively control a regeneration step of the particulate filter.

**8. Claims 16-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Digeser et al. as applied to claim 7 above, in view of Kawatani et al. (U.S. Patent 6,666,019).**

Re claim 16, the method of Digeser et al. discloses the invention as cited above, however, fails to disclose that when the flow of air entering the engine remains constant, and when a quantity of fuel injected into the engine increases during the primary injection, the quantity of fuel is decreased during the secondary injection so as to maintain the constant torque.

As shown in Figure 1, Kawatani et al. disclose an exhaust emission control system for an internal combustion engine. As depicted in Figures 3-4, Kawatani et al. teach that when switching into a special operating state to regenerate a particulate filter (2), it is conventional in the art to increase a quantity of fuel in an after-injection which is to be burnt, while at the same time reduce a quantity in a main injection by a corresponding amount in subsequent cycles, until an intended after-injection quantity is reached in order to inhibit deterioration of the drivability due to a rapid change in torque during the switch (see the Abstract). It would have been obvious to one having ordinary skill in the art at the time of the invention was made, to have utilized the teaching by Kawatani et al. in the method of Digeser et al., since the use thereof would have been routinely utilized by those with ordinary skill in the art to maintain good vehicle drivability during a switch of engine operation to regenerate an emission control device.

Re claim 17, in the modified method of Digeser et al., as taught by Kawatani et al., when a quantity of fuel injected in the engine remains constant during the primary injection and the flow of air entering the engine increases, the quantity of fuel is increased during the secondary injection so as to maintain the constant torque.

### ***Response to Arguments***

9. Applicant's arguments with respect to the references applied in the previous Office Action have been fully considered but they are moot in view of the new ground(s) of rejection.



***Conclusion***

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office Action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

***Prior Art***

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure and consists of two patents: Sasaki et al. (U.S. Patent 5,732,554) and Salvat et al. (U.S. Patent 6,412,276) further disclose a state of the art.

*Communication*

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Tu Nguyen whose telephone number is (571) 272-4862.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Thomas E. Denion, can be reached on (571) 272-4859. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

TMN

May 9, 2008

/Tu M. Nguyen/

Tu M. Nguyen

Primary Examiner

Art Unit 3748